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ABSTRACT

A study investigated the value of professional certification within the context of Massachusetts manufacturing companies with reported sales of at least $10 million but no more than $25 million. The specific certification evaluated was that of Certified in Production and Inventory Management (CPIM) as awarded by the American Production and Inventory Control Society (APICS). Following a review of the background and standards of the certification and APICS, the data were gathered from 70 of 400 manufacturing managers and human resource professionals who responded to the survey of Massachusetts companies concerning their knowledge about and valuation of APICS certifications. The results of the survey showed that certification is a prerequisite qualification (required or desired) for employment in the field of production and inventory control in more than 40 percent of the companies responding. A majority of hiring managers surveyed equate APICS certification with the possession of two or more years of work experience and probably with two or more years of college-level study. The study concluded, however, that APICS should make additional efforts to publicize the CPIM designation and the certification program, because many respondents had never heard of the certificate. (Survey instruments and data and a 32-item bibliography are appended.) (KC)

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APICS CERTIFICATION: A VALUABLE OR VACUOUS DISTINCTION?
A SURVEY OF MASSACHUSETTS MANUFACTURERS

by

Kenneth D. Spikes

A Research Report Submitted to Professor LaPorte

SCHOOL OF BUSINESS

In Partial Fulfillment of the Requirements for the Degree of

BACHELOR OF SCIENCE IN BUSINESS ADMINISTRATION

at

SALEM STATE COLLEGE

April 27, 1989

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KENNETH D. SPIKES, CPIM
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Professor Arthur J. LaPorte
Salem State College
Salem, Massachusetts 01970

Dear Professor LaPorte, April 27, 1989

I have completed my research project for this semester regarding the value of certification by the American Production and Inventory Control Society as perceived by Massachusetts manufacturing companies. The results of this research represent my efforts over the past three months to gather data, conduct an analysis of same, and present it in a manner which imparts to the reader data for decision making relative to his or her environment.

While the scope of this endeavour was somewhat parochial, I believe that this research has brought forth information which the national APICS organization can utilize in targeting elements of their operation for improvement.

As of this date, my research remains unpublished. I intend to continue my pursuit of publication and shall keep you informed as to the result.

Lastly, my thanks and regards to you. When I embarked upon my quest to become "an educated man", in the classical sense, I had in mind a certain type of ideal, erudite, Socratic, type of mentor. Much to my dismay, I have met very few such men or women in my educational travels. You sir, are such a man. In your method and bearing, you epitomize a standard of excellence which most American educators and their institutions have forgotten.

Adios y gracias por todo.

Sincerely,

Kenneth D. Spikes

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The author would like to gratefully acknowledge the contributions of those individuals who helped make this work possible:

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To family and friends, too numerous to mention, for allowing me to disappear from their lives for the last four months, you too paid a price, thanks.

Kenneth D. Spikes

April 27, 1989

DEDICATION

This work is dedicated to J.A.K.,
to whom I owe my sanity
and so much more.

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ABSTRACT

The researcher has investigated the value of professional certification within the context of Massachusetts manufacturing companies with reported sales of at least $10 million but no more than $25 million. The specific certification evaluated was that of Certified in Production and Inventory Management (CPIM) as awarded by the American Production and Inventory Control Society (APICS).

James Fallows has observed that "Starting with Poor Richard's Almanac and running through the Horatio Alger series and such inspirational business tracts as Acres of Diamonds and A Message to Garcia, the flourishing self-improvement industry reflected the American faith that each person held the keys to success in his own hands."[1] Is certification such a key? Will certification provide the holder any measurable benefits? Such is the dilemma facing individuals as they consider the investment of both time and money in pursuing certification.

"In terms of economic analysis, certification, both voluntary and compulsory, can lower information costs about a product or service to buyers and thereby increase the demand for the product or service relative to non-certified products and services," according to W. Lee

Hoskins, Senior Vice President and Chief Economist of PNC Financial Corporation, Pittsburgh, Pennsylvania.[2] The focus of this research was to determine if there was evidence to support the hypothesis that an individual who is certified by APICS receives preferential consideration for employment in the field of Production and Inventory Control by Massachusetts manufacturing companies.

Context provides meaning. In Chapter One, the researcher provides a foundation for inquiry by investigating the current state of affairs regarding certification in the professions. Included in this chapter is an analysis of the differentiation of certification versus licensure and a framework for the evaluation of certification programs.

In Chapter Two, the researcher presents the background and development of the American Production and Inventory Control Society. The certification process is presented and evaluated utilizing criteria applied from the previous chapter. Included in this chapter is information related to APICS membership, activities and services.

The attitudes towards APICS certification of manufacturing managers and human resource professionals are the focus of Chapters Three and Four, respectively. To determine whether the CPIM distinction was recognized in the marketplace and its relative value the researcher gathered data from respondents to his survey of four hundred

Massachusetts manufacturing companies concerning their knowledge about and valuation of APICS certification.

A summary of the researcher's findings and recommendations are contained in Chapter Five. Endnotes, listing noted citations, a Bibliography of sources utilized by the researcher and Appendices conclude this document.

INTRODUCTION

Knowledge should precede action. The American Production and Inventory Control Society counts among its members today some sixty thousand practitioners in the field of Production and Inventory Control. The Society has been in existence for over thirty years. Certification has been a part of its agenda for twenty-five years. Still, the question remains, "Why pursue certification?" The purpose of this study was to provide answers to that question. A beneficial product of this study is the understanding of the value placed upon certification by the individuals who control the hiring process within manufacturing companies, namely, hiring managers and personnel managers. This study endeavored to fill a void. The researcher believes it has.

CHAPTER ONE

PROFESSIONAL CERTIFICATION: THE CURRENT DEBATE

Introduction

Professional certification programs have existed since the Middle Ages, when the 13th-century Holy Roman Emperor Frederick II developed a credentialing program for physicians.[3] From this beginning certification has grown to encompass a significant number of activities. In 1979, the American Society for Association Executives (ASEA) reported that more than 450 associations were offering certification programs.[4] What used to be the province of doctors, lawyers and accountants, now extends to engineering, teaching, manufacturing, human resources, insurance, travel planning and a multitude of other endeavors.

This chapter focuses on the current debate surrounding certification and provides a broad-based understanding of the issues related to same. The researcher has adopted an objective datum from which to analyze the CPIM designation as a professional certification based on a review of related criteria presented in this chapter under the sub-heading of Criteria for Certification.

Methodology

The determination of the nature and scope of the debate over certification in the professions provided the

basis for conducting a review of literature related to the topic. The review was designed to maximize the utilization of on-line data bases as an aid to the researcher. This consideration was important in view of the currency of the topic.

Initial identification of relevant literature was accomplished by employing the following key words in the search of data bases:

CPIM
APICS
CFPIM
Professional certification
Production and Inventory Control
1) careers
2) education
3) certification
4) history
5) employment
6) qualifications
7) salaries
Production and Inventory Management
Certification
CPA
CLU
CMA

The on-line services of the following data bases were used in the initial search:

DIALOG, Dialog Information Systems
LEXIS/NEXIS, Mead Data Central

Literature thus identified was reviewed for specificity to the problem under investigation and sorted by its relation to the questions of certification, criteria or program development, ramifications of certification, or frameworks for the evaluation of certification.

The researcher recognized the need of the reader for a foundation which is broad-based and has balanced that

need with the demarcation of the boundaries for the problem under investigation.

The Question of Certification

What is certification? "Certification is the process by which a professional organization or an independent external agency recognizes the competence of individual practitioners. It is an example of voluntary regulation by peer colleagues. Licensure, on the other hand, is a mandatory legal requirement for certain professions to protect the public from incompetent practitioners."[5] Why would an otherwise unregulated profession seek to institute a certification program? The reasons are varied but may generally be classified under one of three categories: an effort to preempt or forestall legal regulation; an attempt to exclude others from the profession; or to further the aims of a professional society or association. Each of these reasons is cited by Barry Booth in arguing against certification for fear that it "will close down the expansion of our technology and the thought processes of practitioners and theorists."[6] Bill Roe sees the value of certification in the "opportunity to gain prestige within the profession. The certification process ties the individual's total industry experience to a universally understood standard and allows them to take advantage of the career opportunities certification makes available to its holders."[7]

It is valuable to the discourse to pause and consider certification and its distinction vis a vis licensure and accreditation. A diagram developed by Bratton and Hildebrand (1980) lends clarity to the differences (see Figure 1).

Figure 1

Figure 1
Comparison of Accreditation, Licensure, and Certification

Type of Credential	Recipient of Credential	Credentialing Body	Required or Voluntary
Accreditation	Programs	Association/ Agency	Voluntary
Licensure	Individuals	Political Body	Required
Certification	Individuals	Association/ Agency	Voluntary

SOURCE: B. Bratton and M. Hildebrand, "Plain Talk About Professional Certification," Instructional Innovator 25, no. 9(December 1980): 22

As can be seen from the diagram, certification applies to individuals, is voluntary, and the credentialing body is an agency or association. Licensure requires the involvement of a political body (e.g., State or Federal government) and legally excludes those who fail to become licensed from the profession.

What drives the certification movement? Robert T. Golembiewski sees "Two powerful sets of forces-the public

hue-and-cry for accountability, plus the desire of specialists for recognition, affiliation, and some formal grant of special rights."[8] How then does an agency or association determine to whom to grant these "special rights"?

The Criteria for Certification

Creating an equal clamor in the certification debate is the question of criteria for certification. What method should be applied by certifying bodies in the process of certification?

> "If their objective were to select the "best" candidates, they could simply compare the candidates to one another. Any relevant group of test items or activities that would discriminate among candidates could be used as a basis for selecting the "best"; the procedure would be norm-referenced rather than criterion-referenced. However, such is not the purpose of certification. Here the objective is to certify that the candidates can perform core competencies defined by a panel of professionals."[9]

Core competencies are generally derived from a body of knowledge specific to the profession. The criteria for certification range from the taking of a written examination to requirements for a minimum level of work experience and the adherence to a code of ethics. Although less prevalent today, oral examinations are still part of the occasional certification program. The determination of "core competencies" often follows the identification of the body of knowledge. Jerry W. Gilley and Michael W. Galbraith cite

Barry Bratton in listing the benefits of determining core competencies.

> "Six ways competencies help by providing the practitioner and the profession with:
>
> - a tool for self-assessment and professional growth
> - a common set of concepts and vocabulary which will improve communication among professionals and other professional groups
> - academic and professional preparation programs with information for program development
> - a basis for a potential certification program
> - an aid to help employers identify qualified applicants
> - a basis for defining an emerging field of study
>
> Competencies should reflect the skill of a professional regardless of his or her position, title, or academic degree."[10]

Certification programs exist which function as reinforcements of academic programs (such as Certified Public Accountant) or which signify mastery of a body of knowledge specific to an industry or occupation for which academic programs have yet to be formalized (Certified in Production and Inventory Management). The pursuit of certification often requires the investment of several thousand dollars and several years of an individual's time. Why pursue certification?

Benefits of Certification

What can individuals expect in return for their investment of time, effort, and money in the certification process? William E. Perry answers that question succinctly when he says, "Other factors being equal, employers should hire someone who is certified in an area that relates to the job over someone who is not certified: those who make the

effort to substantiate their proficiency should be rewarded ahead of those who show no allegiance to their profession."[11] Employers can derive benefits from certification as well. Ivan J. Houston, writing about correcting a firm's unfair image says, "the impressive growth of professional societies in recent years offers what may be our last, best chance to demonstrate that fair-dealing in the best interests of the consumer is greatly preferred over the well-meaning but ruinous embrace of a bigger bureaucracy."[12] What Houston suggests reinforces the previous comments of Golembiewski and echoes a sentiment that is becoming more prevalent, namely, that if an industry or a profession fails to set and maintain standards of performance, government will be their next dance partner. Another employer benefit related to certification is pointed out by Robert R. Crittendon, CBC, corporate manager of marketing communications for Beckman Instruments, Inc., of Fullerton, California, who believes that a "certification program helps the hiring manager by providing a practical means of evaluating a candidate's competence."[13] The question remains of how to distinguish a solid certification program from a "mail order" variety.

Framework for Evaluation

What components should a certification program have? Michael W. Galbraith and Jerry W. Gilley have applied eight criteria identified by W. E. Scheer in their analysis of certification within the Adult Education and Human Resource Development professions.[14] The characteristics identified by Scheer are:

1) A code of ethics
2) An organized and accepted body of knowledge
3) Specialized (identified competencies) skills
4) Minimum education requirements for its members
5) Provision for certification of proficiency before a member can achieve professional status
6) An orderly process in the fulfillment of responsibilities
7) Opportunity for the promulgation and interchange of ideas among its members
8) An acceptance of the disciplines of the profession, realizing that the price of failure or malpractice is expulsion from the profession

SOURCE: W.E. Scheer, "Is Personnel Management a Profession?" Personnel Journal 43, no. 5(May 1964): 225-261.

An evaluation of the characteristics would preclude a prima facie acceptance of same. Scheer has made no provision for "grandfathering" practitioners who may lack some of the qualifications he espouses. The characteristic of minimum education requirements appears to be unrelated to the certification of proficiency and contributes to the exclusionary nature of certification. His inclusion of a code of ethics and the possibility of expulsion from the profession, while well meaning, would appear to present

problems when applied to a global marketplace, owing to current normative differences between cultures. A major oversight on the part of Scheer was his failure to include in his characteristics one requiring continued proficiency and the demonstration of same. This is one of the primary problems associated with certification programs. Certified today and thoroughly out-of-date in ten years.

In evaluating a certification program, one must look also to the results of certification. James Fallows, in an article entitled "A Substitute for Merit The Case Against Credentialism" shares an anecdotal story about an early certification program.

> "The economic advantages to be had from professional organization were the most concisely explained by Mark Twain, who in Life on the Mississippi described the riverboat pilots' attempt to make themselves into a monopoly. At mid-century, when westward expansion caused the steamboat business to boom, the pilots' pay unaccountably began to fall. The reason, as the pilots' soon deduced, was that any fool off the farm could sign on as an apprentice pilot, increasing competition and depressing the market. A few of the pilots formed a guild, or "association", asking an inflated wage. They slowly recruited members and agreed to exchange information about the river's constantly changing snags and sandbars only with other members of the guild.
>
> "Now came (the) perfectly logical result," Twain wrote, with admiration. "The outsiders began to ground steamboats, sink them, and get into all sorts of trouble, whereas accidents seemed to keep away entirely from the association's men." Insurance companies began to plumb for association pilots; the steamship owners agreed to one wage raise after another, passing on the difference (and then some) in freight. Since no one could become a pilot without the recommendation of two existing pilots, the association could regulate its own competition."[15]

As can be seen from the example, certification, while lacking the legal power of exclusion granted through licensure, often retains de facto exclusionary authority.

CHAPTER TWO

THE AMERICAN PRODUCTION AND INVENTORY CONTROL SOCIETY

Introduction

This chapter contains an overview of the Society, its history, services, and plans for the future. The researcher has evaluated the certification program based on criteria presented in chapter one. The development of Production and Inventory Control as a profession is briefly detailed for the reader who is unfamiliar with its scope.

Methodology

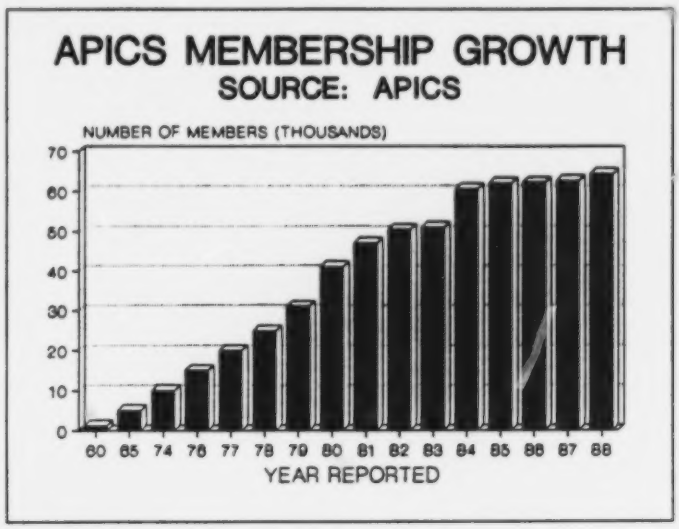
Information regarding the American Production and Inventory Control Society was obtained from the Society headquarters in Falls Church, Virginia. A listing of the Massachusetts Chapter officers was provided to the researcher by APICS and appropriate interviews were conducted by the researcher. Their insights are interspersed throughout the chapter. The researcher drew upon textbooks and the published works of acknowledged Production and Inventory Control experts such as Oliver W. Wight, Joseph A. Orlicky, and George W. Plossl, in presenting the status of the profession of Production and Inventory Control.

APICS History

The American Production and Inventory Control Society was formed in 1957 to develop recognition of the profession of Production and Inventory Management and

increase its efficiency through education, research and the application of scientific methods.[16] Since then it has grown to become an international organization with over sixty-four thousand members worldwide (see Figure 2).

Figure 2



As of the November 1988 certification examination, there were 24,241 individuals who had earned the distinction of Certified in Production and Inventory Management (CPIM) awarded by APICS.[17]

APICS provides members with the following services and benefits:

- monthly and quarterly publications
- training seminars and workshops in the evolving practices of the field
- a professional certification program
- an industrial inquiry service
- an employment referral service

In addition to the national organization, APICS maintains an extensive network of local APICS Chapters.

The local chapter activities focus on the professional development of their members through seminars, plant tours, and involvement in both the academic and business communities. In Massachusetts, APICS sponsors an annual Academic Liaison Conference and encourages the participation of area colleges and universities. A recent conference held at the Royal Plaza Hotel in Boston "attracted between seventy-five and eighty participants from the University of Lowell, Boston University, and Merrimack College," according to Stephen King, President of the Middlesex County Chapter of APICS. King also makes the point that APICS Chapter involvement in the academic community is largely "dependant on the degree of commitment exhibited by the faculty and their desire to remain current with what is happening in industry." The Middlesex County Chapter regularly sponsors College Professional nights, such as those held recently at Boston University and Rhode Island College, where members of the business community serve as panel members for wide-ranging discussions of interest relating to the field of Production and Inventory Control.[18] The North Shore Chapter is well known for their annual plant tours which in the last two years have included tours of the facilities at a Gillette plant and the facilities of Whistler, a manufacturer of radar detection devices.

APICS commitment to the academic community is further evidenced by the "recent approval of the New York State Board of Regents which will begin awarding college

credit for every two APICS certification exams passed," according to Hank Jordan, Chairman of the APICS Curricula and Certification Council.[19] The Worcester County Chapter has "developed an Associate Degree program in conjunction with Central New England College" and is "discussing a similar program with Nichols College," according to Stephen Lacilla, Chapter President.[18]

Certification

The certification process was changed in 1988 to reflect a growing body of knowledge and the emerging Just-in-time manufacturing area. To be recognized as Certified in Production and Inventory Management (CPIM) a candidate must pass five of a series of six uniform examinations administered for APICS by the Educational Testing Service (ETS). A minimum scaled score of 65 out of 100 is required to pass. The examinations cover the following areas:

- Inventory Management
- Production Activity Control
- Just-in-time
- Capacity Management
- Master Planning
- Material Requirements Planning

APICS does not currently require recertification or continuing education to maintain certification.

"The typical candidate for certification takes approximately two and a half to three years" to successfully complete the requirements for certification, according to Stephen King. Based on a survey recently conducted by King, "the APICS Chapter offerings, when the instructor was a practitioner" were reported by certified individuals to be

the optimum way to prepare for the examinations.[20] Study guides, with topical outlines and practice examinations, are available from APICS.

The candidate who successfully completes the examinations must also agree to abide by the APICS Code of Ethics (see Figure 3).

Figure 3

CODE OF ETHICS

1. To maintain and improve sound business practices and foster high standards of professional conduct.
2. To hold in professional confidence any information gained of the business of a fellow member's company, and to refrain from using such information in an unethical manner.
3. To seek success without taking unfair advantage or utilizing questionable acts that would qualify my self-respect.
4. To neither engage in nor sanction any exploitation of my membership, company, or profession.
5. To encourage and cooperate in the interchange of knowledge and techniques for the mutual benefits of the profession.
6. To be careful with my criticisms and liberal with my praise, to build and not to destroy.
7. Whenever a doubt arises as to the right or ethics of my position or action, to resolve such doubt against myself according to generally accepted standards of truth, fair dealing, and good taste.
8. To maintain high personal standards of moral responsibility, character, and business integrity.
9. To uphold the high ideals of the society as outlined in the bylaws.

SOURCE: APICS

Evaluation

How does APICS certification fare when measured against the criteria set forth by Scheer? The APICS certification lacks both "minimum education" requirements for its members and "the acceptance of the disciplines of the profession, realizing that the price of failure or malpractice is expulsion from the profession."[21] One need not possess any formal education to become certified as a CPIM. The Society does not have a policing body before which an individual would stand were he or she to violate

the Code of Ethics or be guilty of malpractice. In short, once certified, a practitioner need not fear expulsion. These two factors, coupled with the lack of a continuing education requirement, would appear to undermine the value of the designation.

The Profession

Production and Inventory Control traces its modern roots to Frederick W. Taylor and scientific management. As early as the late 1950's Production Control was recognized by Franklin G. Moore as "the factory's nervous system. Production Control's objective is to get out the desired products economically and on time."[22] The advent of computers in the 1960's and increasing international competition since, have combined to create, within manufacturing operations, the specialization known as Production and Inventory Control. Oliver W. Wight, in his book Production and Inventory Control in the Computer Age, states that "Production and inventory management that started out as a clerical function assisted by some stock chasing has come of age today. The pressures to keep inventories down, to give better customer service, and to maintain stability in plant employment have forced management to devote some attention to a badly neglected area."[23]

As a result of this attention, opportunities within the field of Production and Inventory Control are greatly enhanced today.

CHAPTER THREE

DO HIRING MANAGERS PREFER MEN OF LETTERS?

Introduction

Hiring managers are key decision makers in the hiring process and ascertaining their disposition towards hiring certified over non-certified individuals would provide the prospective candidate for certification with a means of justifying his or her investment of time and money in the certification process. The researcher defined hiring managers to include only those individuals who possess hiring authority and to whom at least one exempt supervisor reports. The researcher made the assumption that hiring managers can distinguish between certified and non-certified individuals.

The Methodology

The researcher gathered data from hiring managers within Massachusetts manufacturing companies regarding their recognition of the CPIM certification awarded by the American Production and Inventory Control Society. The population of Massachusetts manufacturing companies with reported annual sales of between ten and twenty-five million dollars was identified utilizing the on-line data base Dun & Bradstreet's Market Identifiers.

The Standard Industrial Classification (SIC) codes for manufacturing, as defined by the U.S. Department of Labor, were used as the criteria for defining a company as a

manufacturer. The manufacturing division, as defined by the U.S. Department of Labor, includes "establishments engaged in the mechanical or chemical transformation of materials or substances into new products."[24] The manufacturing division consists of major industry groups twenty (20) through thirty-nine (39).

The hiring managers responsible for manufacturing were identified, to the extent possible, utilizing the 1988 Corporate Technology Directory. As a result of this effort the researcher identified eighty-six individuals who held the specified position, or an equivalent position, within the companies identified.

A simple sample of four hundred companies to be surveyed was selected from a total population of five hundred twelve companies identified per the criteria for sales and classification. The researcher first selected those companies in which a specific manager had been identified and drew the balance of three hundred fourteen companies sequentially from the remaining population. This method was determined by the researcher to provide the greatest probability of response (see Appendix A).

The instrument of collection utilized was a two page questionnaire designed by the researcher and mailed with a stamped, addressed reply envelope, to the individuals identified as noted previously. For those companies for which the researcher was unable to to identify a specific

manager the questionnaires were addressed to the generic title of "Manufacturing Manager".

Included as part of the mailed package was a cover letter to the respondent setting forth the consideration offered by the researcher to the respondent, the justification for the respondent's participation in the survey, a brief description of the researcher's biography, and instructions related to the handling of the questionnaire (see Appendix E).

The questionnaire consisted of twelve questions arranged in a manner which first validated the level of annual sales of the company, identified potential bias on the part of the respondent, determined whether the respondent met the criteria established for hiring managers, and measured the respondent's ability to identify the CPIM designation. There followed questions which measured the respondent's valuation of APICS certification and disposition to hire a certified candidate over a non-certified candidate. The questionnaire then closed with questions determining the respondent's relationship to APICS, the salary premium he or she would offer the certified candidate over the non-certified candidate, and whether the respondent would recommend APICS certification to his or her employees for their professional development (see Appendix E).

The data received from the respondents were

converted to a numeric scale and tabulated using the LOTUS 1-2-3 spreadsheet software package. All dichotomous questions were converted to binary values. The data from questions one, three, four, five, seven, and eight were assigned ordered values from zero to eight to facilitate utilization of the data within the spreadsheet program (see Appendix E).

Response Demographics

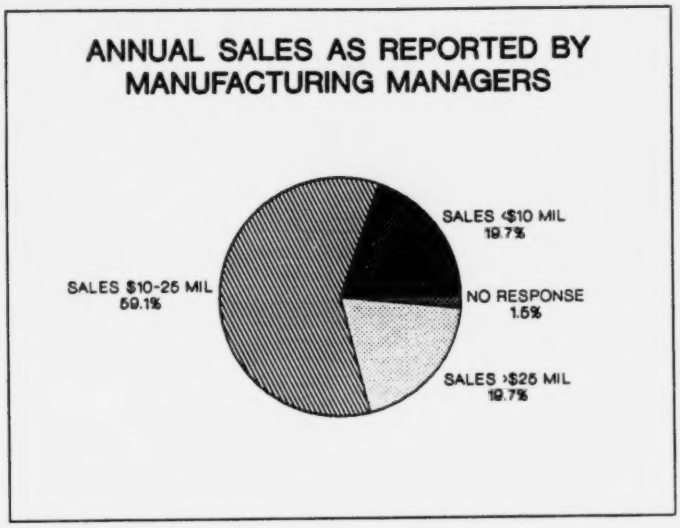
From the four hundred questionnaires mailed, the researcher experienced a response rate of 17.63%. Excluding the four respondents who failed to meet the criteria established under the definition of hiring manager yielded a valid response rate of 16.62% as presented in Table 1.

Table 1

MASSACHUSETTS MANUFACTURING MANAGERS SURVEY RESPONSE	
MAILED	400
UNDELIVERABLE	3
NET MAILED	397
RESPONSES	70
PERCENT	17.63%
# MEETING CRITERIA	66
VALID PERCENT	16.62%

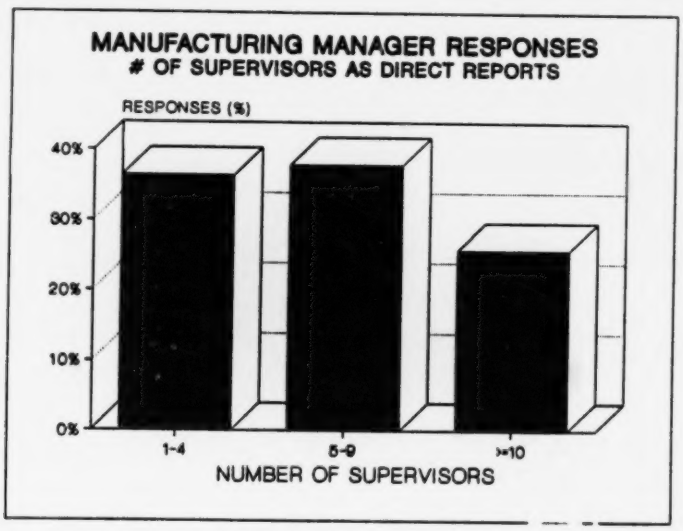
Annual sales as reported by the respondents deviated from the parameters of control for the sample. This is attributed to the dynamic nature of sales. No respondents were excluded by the researcher based on this statistic (see Figure 4).

Figure 4



Four of the respondents were excluded based upon their failure to meet the criteria relating to the number of supervisors as direct reports. The distribution within the categories set by the researcher for respondents who met the criteria is presented in Figure 5. The majority of respondents (approximately seventy-five percent) had fewer than ten supervisors as direct reports.

Figure 5



The distribution of areas of responsibility as reported by the respondents was concentrated in typical Production and Inventory Control areas. The only area with less than a majority of respondents reporting direct responsibility was that of distribution (see Figure 6).

Figure 6

Affiliation with a professional society or association was reported by 71.21% of the respondents. This is contrasted with the 31.82% who reported being APICS members. The CPIM designation was correctly identified by 42.42% of the respondents as being the certification awarded by APICS. This would suggest that the designation is recognized within the Production and Inventory Control profession to a significant extent. Further reinforcement

of this observation is provided by evidence that APICS certification is specified as a required or desirable qualification in at least one job description in an area for which the respondent has direct responsibility in 40.91% of the reporting companies.

Valuation of APICS Certification

The respondents equated APICS certification with a mean of 1.272 years of college level study and 1.742 years of relevant work experience. The mean years of college level study is contrasted with the median reported of one year with a standard deviation of 1.273. The mean years of relevant work experience is contrasted with the median of two years and a standard deviation of 1.617 (see Figures 7 and 8).

Figure 7

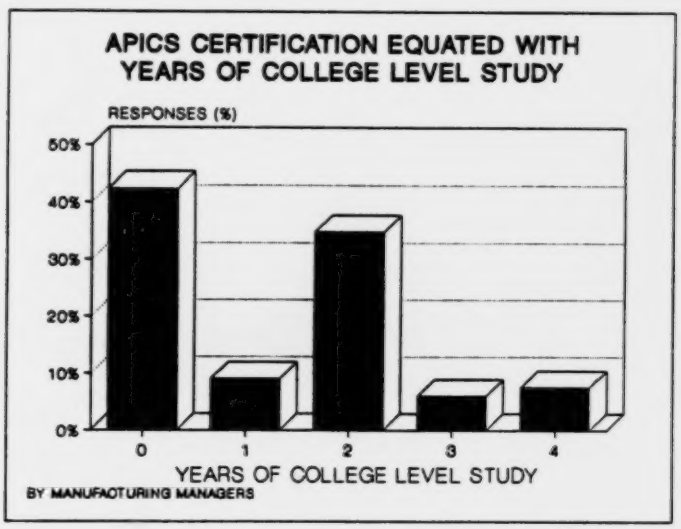
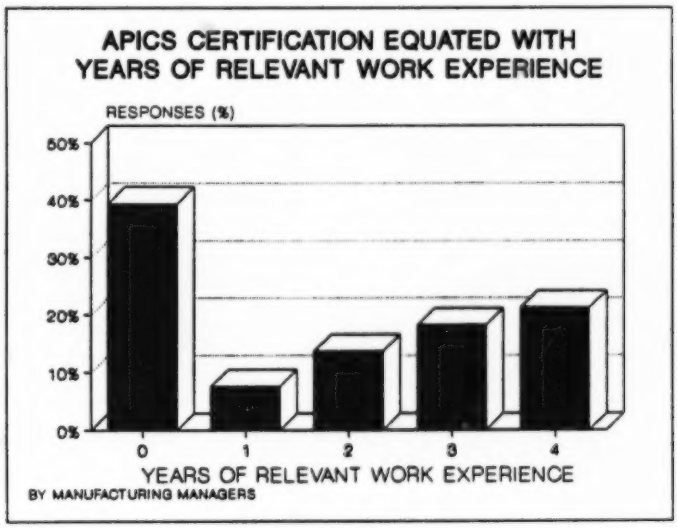
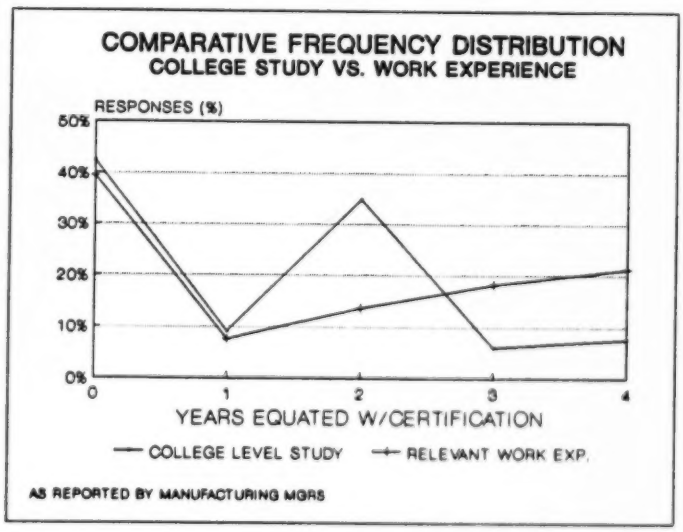


Figure 8



A comparative frequency distribution of the responses to the two questions equating certification with either college level study or relevant work experience is presented in Figure 9.

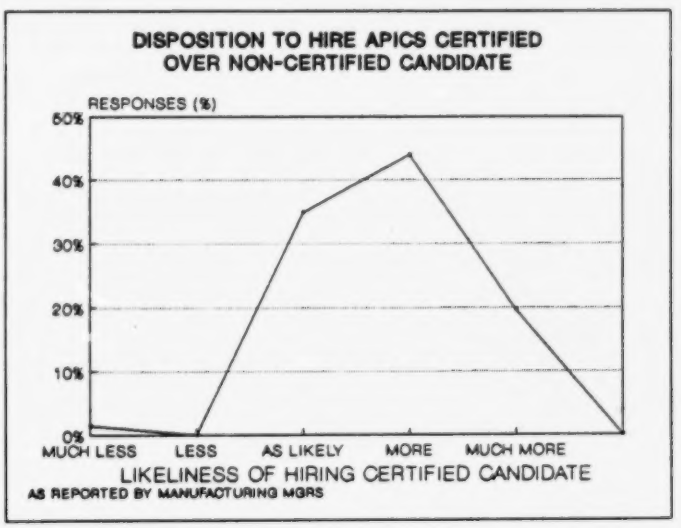
Figure 9



When the researcher eliminates the responses of those managers who would not equate APICS certification with college level study or relevant work experience the mean years of college level study is raised to 2.210 years with a standard deviation of 1.274 while the mean years of relevant work experience is raised to 2.875 years with a standard deviation of 1.53.

A majority (63.64%) of the manufacturing managers reported that they would be more or much more likely to hire a certified candidate over a non-certified candidate (see Figure 10).

Figure 10

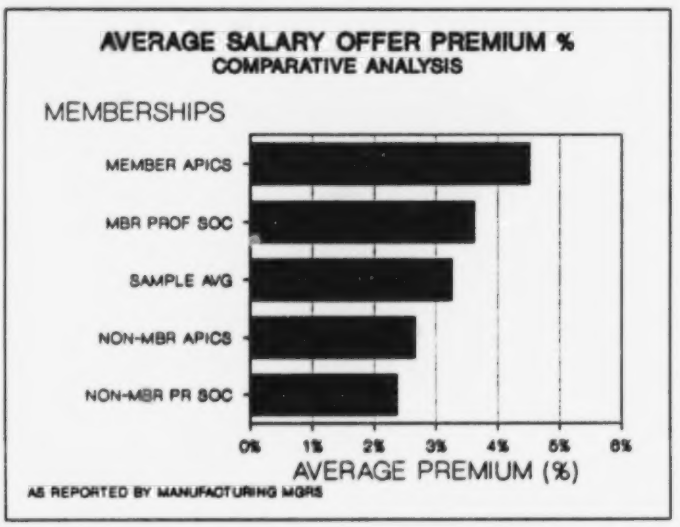


The respondents reported that they would offer the certified candidate a salary premium over that offered to the non-certified candidate. The average premium for the sample was 3.257% and ranged from zero to fifteen percent.

Eliminating those who would not offer a premium increases the average premium to 7.413%.

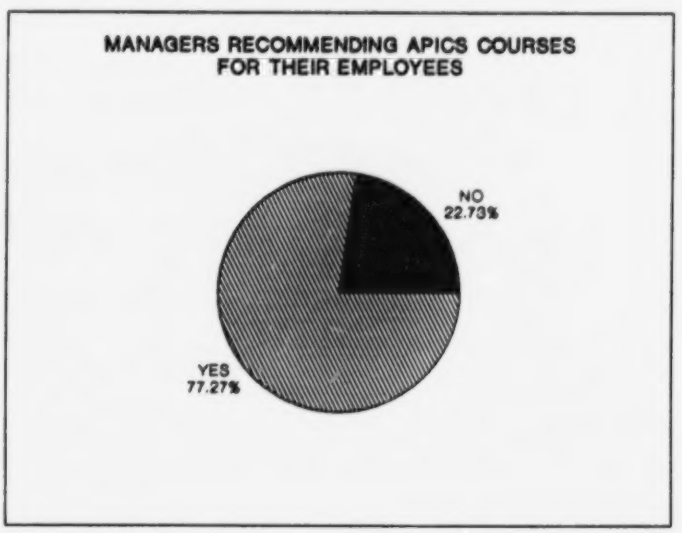
A comparative analysis of premium average based on classification of the respondent is presented in Figure 11, with APICS members reporting the highest average premium and non-members reporting the lowest.

Figure 11



A significant majority of the respondents would recommend APICS courses for the professional development of their employees (see Figure 12).

Figure 12



Conclusions

Based on the data gathered from the survey, the researcher would not reject the hypothesis that individuals possessing APICS certification are given preferential consideration for employment by the hiring managers of Massachusetts manufacturing companies. Certification is a prerequisite qualification (required or desired) for employment in the field of Production and Inventory Control in over forty percent of the Massachusetts manufacturing companies surveyed. A majority (53.03%) of hiring managers surveyed equate APICS certification with the possession of two or more years of relevant work experience. The hypothesis that a majority of hiring managers would equate APICS certification with two or more years of college level study would not be rejected. The reported proportion of 48.49% does not differ from the hypothesized proportion of 50% when a test at the level of significance α of .05 is performed. Using the equation $t_{n-1} = (\bar{x}-\mu_x)/(s/\sqrt{n})$ and assuming a normal distribution of the sampling distribution, produces a value for t_{65} of -.09636 and critical values of -1.991 and +1.991 as derived from a standard Table of Critical Values of t. As the calculated value falls between the critical values, the researcher would not reject the hypothesis in that there is evidence that a majority of

hiring managers equate APICS certification with two or more years of college level study.

CHAPTER FOUR

ARE HUMAN RESOURCE PROFESSIONALS INDIFFERENT TO THE DISTINCTION OF APICS CERTIFICATION?

Introduction

Human Resource professionals play a key role in the job design, recruitment, selection and human resource development process. The researcher gathered data from Human Resource professionals within Massachusetts manufacturing companies regarding their recognition of the CPIM certification awarded by the American Production and Inventory Control Society. Ascertaining their disposition towards hiring certified individuals over non-certified individuals would provide the prospective candidate for certification with a means of justifying his or her investment of time and money in the certification process.

The researcher made the assumptions that Human Resource professionals can distinguish certified individuals from non-certified individuals and that reimbursement of tuition expenses for APICS sponsored courses and seminars, to employees by their employer, is evidence that certification is valued by that employer.

The Methodology

The population of Massachusetts manufacturing companies with reported annual sales of at least ten and no more than twenty-five million dollars was identified

utilizing the on-line data base Dun & Bradstreet's Market Identifiers.

The Standard Industrial Classification (SIC) codes for manufacturing, as defined by the U.S. Department of Labor, were used in selecting the population from which the sample was taken. The manufacturing division includes "establishments engaged in the mechanical or chemical transformation of materials or substances into new products."[25] The manufacturing division consists of major industry groups twenty (20) through thirty-nine (39).

The Human Resource professionals were identified, to the extent possible, utilizing the 1988 Corporate Technology Directory. As a result of this effort the researcher identified eighty-six individuals who held the specified position, or an equivalent position, within the companies identified.

A simple sample of four hundred companies to be surveyed was selected from the population of five hundred twelve by first including all companies in which a specific individual had been identified and then selecting the balance of three hundred fourteen companies sequentially from the remaining population. This method was determined by the researcher to provide the greatest probability of response (see Appendix B).

The instrument of collection utilized was a two page questionnaire designed by the researcher and mailed with a stamped, addressed reply envelope, to the individuals

identified as noted previously. For those companies for which the researcher was unable to identify a specific individual by name the questionnaires were addressed to the generic title of "Human Resources Manager".

Included as part of the mailed package was a cover letter to the respondent setting forth the consideration offered by the researcher to the respondent, the justification for the respondent's participation in the survey, a brief description of the researcher's biography, and instructions related to the handling of the questionnaire (see Appendix E).

The questionnaire consisted of twelve questions arranged in a manner which first validated the level of annual sales of the company, identified potential bias on the part of the respondent, determined whether the respondent's company advertised for employment in the Boston Globe, and measured the respondent's ability to identify the CPIM designation. There followed questions which measured the respondent's valuation of APICS certification and disposition to hire a certified candidate over a non-certified candidate. The questionnaire closed with a question determining the salary premium the respondent would offer the certified candidate over the non-certified candidate.

The data received from the respondents were converted to a numeric scale and tabulated using the LOTUS 1-2-3 spreadsheet software package. All dichotomous

questions were converted to binary values. the data from questions one, four, five, seven, and nine were assigned ordered values from zero to five to facilitate utilization of the data within the spreadsheet program (see Appendix E). Graphical presentation of the data was accomplished utilizing the Harvard Graphics software package.

Response Demographics

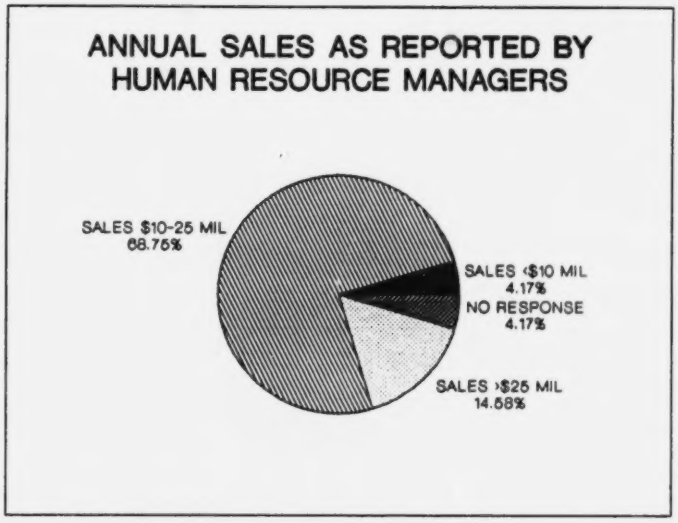
From the four hundred questionnaires mailed, the researcher experienced a response rate of 13.28%. Exclusion of the four respondents who returned blank or insufficiently complete questionnaires yeilded a valid response rate of 12.28% as presented in Table 2.

Table 2

HUMAN RESOURCE MANAGERS SURVEY RESPONSE	
MAILED	400
UNDELIVERABLE	1
NET MAILED	399
RESPONSES	53
PERCENT	13.28%
# MEETING CRITERIA	49
VALID PERCENT	12.28%

Annual sales as reported by the respondents deviated from the parameters of control for the sample. This is attributed to the dynamic nature of sales. No respondents were excluded by the researcher based on this statistic (see Figure 13).

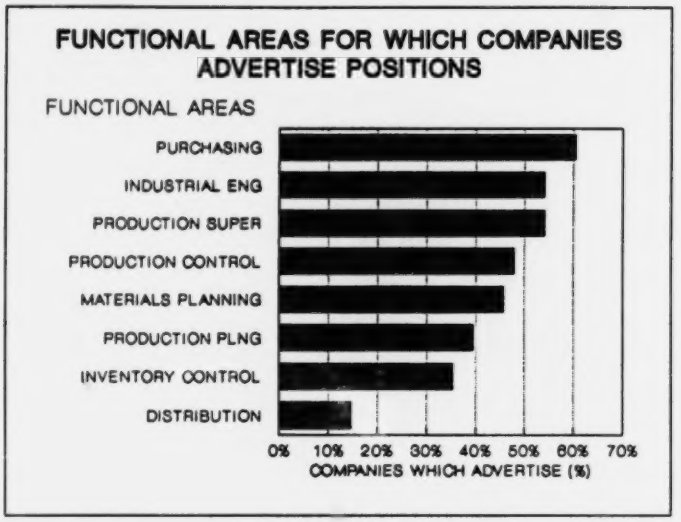
Figure 13



Affiliation with a professional society or organization was reported by 81.25% of the respondents. The CPIM designation was correctly identified by 33.33% of the respondents as being the certification awarded by APICS. APICS certification is specified as a required or desirable qualification in at least one job description within the company in 43.75% of the companies responding to the survey.

Seventy-nine percent of the respondents reported that they advertised Production and Inventory Control positions in the Boston Globe. The functional areas for which the respondents advertised are presented in Figure 14.

Figure 14



Valuation of APICS Certification

The respondents equated APICS certification with a mean of 1.0625 years of college level study and 1.6042 years of relevant work experience. The mean years of college level study is contrasted with the median of one year with a standard deviation of .9875. The mean years of relevant work experience is contrasted with a median of one year with a standard deviation of 1.5376 (see Figures 15 and 16).

Figure 15

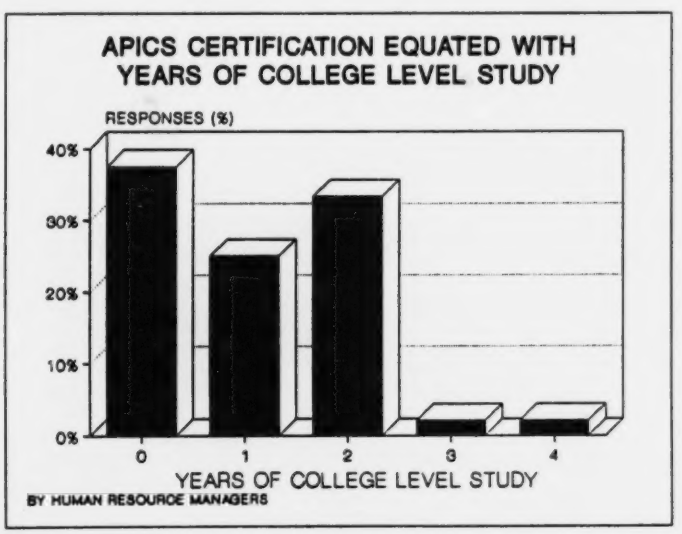
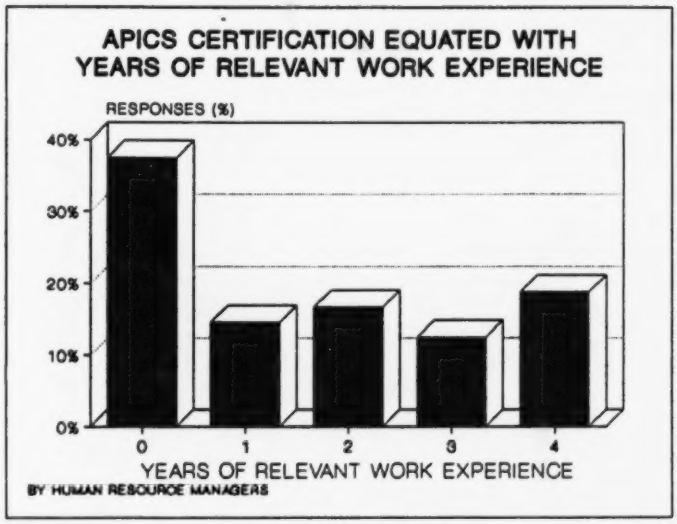
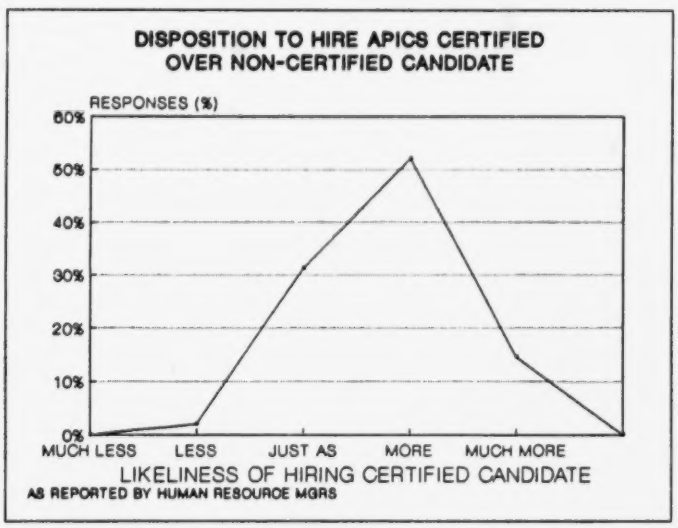


Figure 16



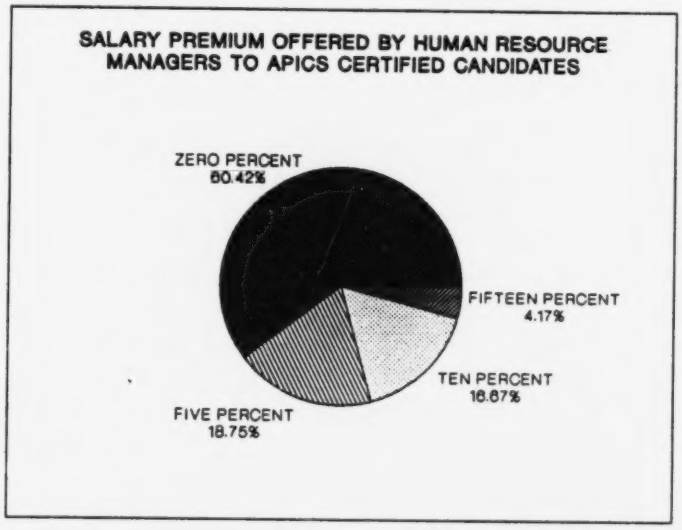
A majority (66.66%) of Human Resource professionals reported that they would be more or much more likely to hire a certified candidate over a non-certified candidate (see Figure 17).

Figure 17



The respondents reported that they would offer the certified candidate a salary premium over that offered to the non-certified candidate. The average premium for the sample was 3.2292% and ranged from zero to fifteen percent (see Figure 18).

Figure 18



The majority (79.17%) of companies reported that they reimburse employees for attending APICS sponsored courses and seminars. Approximately forty-eight percent of the companies surveyed reported that they currently employ APICS certified individuals.

Conclusions

Based on the data gathered from the survey, the researcher would not reject the hypothesis that an individual possessing APICS certification is given preferential consideration for employment by Human Resource professionals within Massachusetts manufacturing companies.

Certification is a prerequisite (required or desired) qualification for employment in the field of Production and Inventory Control in over forty percent of the companies surveyed. A majority of Human Resource professionals equate certification with the possession of at least two or more years of relevant work experience. The researcher would reject the hypothesis that a majority of Human Resource professionals equate APICS certification with two or more years of college level study. The evidence presented, that a significant proportion of the companies surveyed reimburse employees for APICS sponsored courses and seminars, compels the researcher to not reject the hypothesis that APICS certification is valued by Massachusetts manufacturing companies based on the stated assumption of the researcher.

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

Valuation of Certification

Based on the data presented, the researcher would not reject the hypothesis that individuals possessing certification by the American Production and Inventory Control Society are afforded preferential consideration for employment in the field of Production and Inventory Control by Massachusetts manufacturing companies. The certified individual can expect his or her certification to be equated with more than one year of college level study or relevant work experience. The evidence presented that the overwhelming majority (77.27%) of hiring managers would recommend APICS certification for their employees coupled with the evidence that companies (79.17%) are willing to reimburse their current employees for expenses related to APICS sponsored courses and seminars is indicative of strong support on the part of companies for APICS training.

The comments of respondents underscore the need for additional efforts on the part of APICS to publicize the CPIM designation and the certification program. Typical

comments were as follows:

- "Program is unknown to me."

- "I haven't the slightest idea what is involved for certification so other than sounding good it has little meaning to me as a Vice President & General Manager with an MBA"

- "I do not have any knowledge of APICS..."

- "In all honesty, I have never heard of APICS.."

- "What is it?"

The evidence that less than half of the combined respondents could correctly identify the CPIM designation as the certification awarded by APICS reinforces this conclusion.

In equating the value of certification with college level study and work experience, the results reported from the hiring managers and Human Resource professionals were consistent. This result would seem to belay the perception that the two groups apply different criteria in their evaluation of candidates for employment.

There is no statistical difference in the mean salary premium offered to certified candidates, 3.2292% and 3.257%, by Human Resource professionals and hiring managers, respectively.

Hank Jordan, Chairman of the Curricula and Certification Council of APICS, informed the researcher that the certification program of APICS "was not to be used as a qualification for jobs," that it was simply a "self-assessment test to measure an individual's command of the body of knowledge."[26] While the stated intent of the

certification program may not have been to provide employers with a benchmark for excluding candidates from employment, a perusal of the help-wanted section of the Boston Globe on any given Sunday will provide the reader with the extent to which certification is currently being advertised as a qualification for jobs in the Production and Inventory Control field.

APICS intends to introduce a new certification, currently known as Certified in Integrated Resource Management (CIRM), in the near future. As currently envisioned, this certification will encompass fourteen distinct bodies of knowledge and test the practitioner in the areas of Engineering, Quality Control, Personnel, and Management Information Systems, to name but a few.[27] The development of this certification is the result of a change in the mission statement of APICS adopted by the Board of Directors which expanded the scope of APICS from Production and Inventory Control to the broader realm of Resource Management and an independently conducted market study commissioned by APICS to determine specific needs.[28]

Recommendations

Based upon the research conducted, the comments of Hank Jordan notwithstanding, the researcher suggests the following recommendations be adopted by APICS:

1. Undertake a program to market the certification program to user groups (manufacturers).

2. Expand the current effort to involve the academic community with the profession of Production and Inventory Management.

3. Create a Board of Overseers to whom violations of the Code of Ethics would be brought and before whom a practitioner would stand if accused of said violations.

4. Adoption of minimal educational requirements (formal college study) for individuals desiring certification.

5. Adoption of requirements for Continuing Education for Certified practitioners.

6. Adoption of a minimum relevant work experience requirement for certification.

The adoption by APICS of the recommendations would strengthen the value of certification and perhaps prevent the occurrence of situations such as that related to the researcher by Stephen Lacilla, President of the Worcester County APICS Chapter. Lacilla tells the story of talking with a candidate for certification prior to the administration of a recent certification exam. The individual was a senior at a local college and had passed all but one of the certification examinations with scores in the nineties (Fellow Level). This individual related to Lacilla the absurdity of the certification process as he told him that "yes, he had passed all the exams he had taken, with high scores, but if he ever had to go out onto a shop floor he wouldn't be able to find his way to the men's room."[29]

ENDNOTES

[1] James Fallows, "A Substitute for Merit: The Case Against Credentialism," Current (March/April 1986): 3-17.

[2] W. Lee Hoskins, "Professional Certification: An Idea in Search of a Problem," Business Economics (April 1986): 15-20.

[3] Jerry W. Gilley, "Seeking the Common Pattern," Association Management (August 1985): 125-127.

[4] Barry Bratton and Myrene Hildebrand, "Plain Talk About Professional Certification," Instructional Innovator v25 n9 (December 1980): 22-49.

[5] Robert T. Golembiewski, "Toward Professional Certification," The Bureaucrat v12 (Summer 1983): 50-55.

[6] Barry Boothe, "Certification-Beyond Reason," Performance & Instruction Journal v23 n1 (February 1984): 19-20.

[7] Bill Roe, "Certification: Issues and Answers," Journal of Systems Management v35 n7 (July 1984): 36-40.

[8] Robert T. Golembiewski, "Toward Professional Certification," The Bureaucrat v12 (Summer 1983): 50-55.

[9] Sharon A. Shrock and Wellesley R. Foshay, "Measurement Issues In Certification," Performance & Instruction Journal v23 n1 (February 1984): 23-27.

[10] Jerry W. Gilley and Michael W. Galbraith, "Examining Professional Certification," Training and Development Journal v40 n6 (June 1986): 60-61.

[11] William E. Perry, "Benefiting from Certification," Journal of Accounting & EDP v1 n4 (Winter 1986): 60-62.

[12] Ivan J. Houston, "Professionalism Can Right A Firm's Unfair Public Image," The Office (January 1985): 105.

[13] Lee Rosen, "Certification: More Than Window Dressing?" Industrial Marketing (June 1980): 95-96.

[14] Michael W. Galbraith and Jerry W. Gilley, "Professional Certification: Implications for Adult Education and HRD". Columbus, Ohio: National Center for Research in Vocational Education, 1986. ERIC IN 307.

[15] James Fallows, "A Substitute for Merit: The Case Against Credentialism," Current (March/April 1986): 3-17.

[16] The American Production and Inventory Control Society, Falls Church, Virginia.

[17] "Newly Certified Individuals", Production & Inventory Management Review with APICS News (April 1989): 13.

[18] Stephen King, interview by author, Notes retained by author, Pepperell, Massachusetts, 22 April 1989.

[19] Hank Jordan, interview by author, Notes retained by author, Pepperell, Massachusetts, 22 April 1989.

[20] Stephen King, interview by author.

[21] W.E. Scheer, "Is Personnel Management a Profession?" Personnel Journal v43 n5 (May 1964): 225-261.

[22] Franklin G. Moore, Production Control (New York, New York: McGraw-Hill, Inc., 1959),p. 6.

[23] Oliver W. Wight, Production and Inventory Control in the Computer Age (New York, New York: Van Nostrand Reinhold Company, 1983),p. 15-16.

[24] Executive Office of the President, Office of Management and Budget, Standard Industrial Classification Manual (Springfield, Virginia: National Technical Information Service, 1987), p. 11.

[25] Ibid.

[26] Hank Jordan, interview by author.

[27] Stephan Lacilla, interview by author, Notes retained by author, Pepperell, Massachusetts, 22 April 1989.

[28] Hank Jordan, interview by author.

[29] Stephan Lacilla, interview by author.

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KENNETH D. SPIKES
221 SOUTH ROAD
PEPPERELL, MASSACHUSETTS 01463
(508) 433-2500

March 13, 1989

Manufacturing Manager
L & P CONVERTERS CORP
Route #169
Charlton, MA 02559-1980

Dear Manufacturing Manager:

Quid pro quo has long been a maxim of business relationships. That is why I am offering you the opportunity to receive an Executive Summary of the research I am conducting regarding professional certification in exchange for two minutes of your time.

The direct benefits of your participation in this research are:

- the opportunity to add to the body of knowledge regarding certification
- receipt of an analysis of the attitudes of both personnel managers and hiring managers regarding certification
- possession of a valuable tool for justifying an existing professional development program or implementing one

Please complete the enclosed questionnaire and return it to me in the stamped, addressed envelope which I have provided. All responses will remain anonymous.

I am a senior Business Administration student at Salem State College in Salem, MA and this research is being conducted in partial fulfillment of the requirements of my degree.

Your contribution to the success of this endeavor is appreciated. If you believe that another individual within your organization possesses specific knowledge which would enhance the research results, please forward the questionnaire to him or her for completion.

Thank you for your participation and I look forward to receiving your response shortly.

Sincerely,

Kenneth D. Spikes

SURVEY OF MASSACHUSETTS MANUFACTURERS
Professional Manager Questionnaire

---

1. Annual sales of your company last year were?

   1 less than $10 million
   2 $10-$25 million
   3 more than $25 million

2. Are you currently affiliated with a professional society or association?

   1 yes 0 no

3. How many supervisory personnel report to you?

   0 0 1 1-4 2 5-9 3 10 or more

4. Which of the following areas are you directly responsible for:

0 or 1	Materials planning	0 or 1	Production
0 or 1	Inventory control	0 or 1	Distribution
0 or 1	Production planning	0 or 1	Production control
0 or 1	Purchasing	0 or 1	Industrial engineering

5. From the following list, please identify the certification awarded by the American Production and Inventory Control Society by placing an "X" next to the appropriate item.

   0 = No Response

   1 CPM
   2 CMA
   3 CPIM
   4 CPIC

6. Is APICS (American Production and Inventory Control Society) certification specified as a required or desirable qualification in any job description in an area for which you have responsibility?

   1 yes 0 no

7. In your opinion, APICS certification can best be equated with which of the following?

   1 one year of college level study
   2 two years of college level study
   3 three years of college level study
   4 four or more years of college level study
   0 none of the above

SURVEY OF MASSACHUSETTS MANUFACTURERS
Professional Manager Questionnaire

8. In your opinion, APICS certification can best be equated with which of the following?

1 one year of relevant work experience
2 two years of relevant work experience
3 three years of relevant work experience
4 four years of relevant work experience
0 none of the above

9. All other things being equal, would you be

[1] much less | [2] less | [3] just as | [4] more | [5] much more

likely to hire a candidate for a Production and Inventory Control position who possessed APICS certification?

10. Are you a member of the American Production and Inventory Control Society?

1 yes 0 no

11. All other things being equal, the successful candidate who possessed APICS certification would receive a salary offer that was

[0] equal to | [5] 5% greater than | [10] 10% greater than | [15] 15% greater than

that of a non-certified candidate?

12. Would you recommend APICS sponsored certification courses for the professional development of your employees?

1 yes 0 no

Thank you for your time and honesty. If you would like to receive an Executive Summary of the research findings, please complete the following:

Name

Position or Title

Street Address

City State

ZIP Code

PLEASE PLACE THE COMPLETED QUESTIONNAIRE IN THE ENCLOSED, STAMPED ENVELOPE AND MAIL IT TODAY! YOUR TIMELY RESPONSE IS VERY IMPORTANT. ONCE AGAIN, THANK YOU.

1989-BUS563-497328 KS

BEST COPY AVAILABLE

KENNETH D. SPIKES
221 SOUTH ROAD
PEPPERELL, MASSACHUSETTS 01463
(508) 433-2500

March 13, 1989

Human Resources Manager
L & P CONVERTERS CORP
Route #169
Charlton, MA 02559-1980

Dear Human Resources Manager:

Quid pro quo has long been a maxim of business relationships. That is why I am offering you the opportunity to receive an Executive Summary of the research I am conducting regarding professional certification in exchange for two minutes of your time.

The direct benefits of your participation in this research are:

- the opportunity to add to the body of knowledge regarding certification
- receipt of an analysis of the attitudes of both personnel managers and hiring managers regarding certification
- possession of a valuable tool for justifying an existing professional development program or implementing one

Please complete the enclosed questionnaire and return it to me in the stamped, addressed envelope which I have provided. All responses will remain anonymous.

I am a senior Business Administration student at Salem State College in Salem, MA and this research is being conducted in partial fulfillment of the requirements of my degree.

Your contribution to the success of this endeavor is appreciated. If you believe that another individual within your organization possesses specific knowledge which would enhance the research results, please forward the questionnaire to him or her for completion.

Thank you for your participation and I look forward to receiving your response shortly.

Sincerely,

Kenneth D. Spikes

SURVEY OF MASSACHUSETTS MANUFACTURERS
Human Resource Professional Questionnaire

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1. What were the annual sales of your company last year?

   1 less than $10 million
   2 $10-$25 million
   3 more than $25 million

2. Are you currently affiliated with a professional society or association?

   1 yes 0 no

3. Does your company advertise professional employment opportunities in the Boston Globe?

   1 yes 0 no

4. In which of the following areas does your company advertise positions?

0 or 1	Materials planning	0 or 1	Production supervision
0 or 1	Inventory control	0 or 1	Distribution
0 or 1	Production planning	0 or 1	Production control
0 or 1	Purchasing	0 or 1	Industrial engineering

5. From the following list, please identify the certification awarded by the American Production and Inventory Control Society by placing an "X" next to the appropriate item.

   0 = No Response

   1 CPM
   2 CMA
   3 CPIM
   4 CPIC

6. Is APICS (American Production and Inventory Control Society) certification specified as a required or desirable qualification in any job description at your company?

   1 yes 0 no

7. In your opinion, APICS certification can best be equated with which of the following?

   1 one year of college level study
   2 two years of college level study
   3 three years of college level study
   4 four or more years of college level study
   0 none of the above

SURVEY OF MASSACHUSETTS MANUFACTURERS
Human Resource Professional Questionnaire

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8. Does your company reimburse employees for tuition expenses for APICS sponsored courses or seminars?

___1___ yes ___0___ no

9. In your opinion, APICS certification can best be equated with which of the following?

___1___ one year of relevant work experience
___2___ two years of relevant work experience
___3___ three years of relevant work experience
___4___ four years of relevant work experience
___0___ none of the above

10. All other things being equal, would you be

[1]	[2]	[3]	[4]	[5]
much less	less	as	more	much more

likely to hire a candidate for a Production and Inventory Control position who possessed APICS certification?

11. Does your company currently employ any individuals who are certified by APICS?

___1___ yes ___0___ no

12. All other things being equal, the successful candidate who possessed APICS certification would receive a salary offer that was

[0]	[5]	[10]	[15]
equal to	5% greater than	10% greater than	15% greater than

that of a non-certified candidate?

Thank you for your time and honesty. If you would like to receive an Executive Summary of the research findings, please complete the following:

Name

Position or Title

Street Address

City State

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PLEASE PLACE THE COMPLETED QUESTIONNAIRE IN THE ENCLOSED, STAMPED ENVELOPE AND MAIL IT TODAY! YOUR TIMELY RESPONSE IS VERY IMPORTANT. ONCE AGAIN, THANK YOU.

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